posite according to the preferred embodiments of the present invention which both show good freeze/thaw durability, exhibit significantly lower pore volumes in the fibre pore zone (10-1 microns) and air pore zone (100-10 microns) compared to the unpressed medium density FC composite.

Test 4—Moisture Resistance

Example 2

As a further analysis, moisture resistance parameters corresponding to conventional unpressed material and the modified blend unpressed FC composite of the preferred embodiments of the present invention were assessed. The results are shown in Table 5 below.

TABLE 5

Wicking height results for unpressed durable and standard FC composites.

Composition	Wicking height after 48 hours, mm	Water permeation rate after 48 hours ML/hr/0.002 m^2
Conventional Unpressed FC	207	113
Unpressed Modified Blend FC	43	31

The water permeation rate was measured on a 250 mm by 250 mm by 6 mm sample, laid flat and attached to a 100 mm high, 50 mm diameter Perspex column filled with water and monitored for extent of permeated water volume of 48 hours. Wicking height was measured on a 250 mm by 250 mm by 6 mm sample laid on edge in a flat tray in an upright position and monitored for wicking height progression over 48 hours. It can be seen that the unpressed modified blend FC composite exhibited more than about a 70% reduction in wicking height and water permeation rate compared to the conventional unpressed FC composite.

Once again, these results are quite surprising in view of conventional understanding. Water permeability may be reduced by pore filling, segmenting or pressing. Wicking on the other hand is much more difficult to control in medium density FC products which contain cellulose fibre due to their small diameter and tubular structure which promotes wicking along the fibre direction by capillary action.

It is also surprising that the low silica fume addition level in the modified blend according to the preferred embodiments of the present invention is sufficient to impart significant moisture resistance and durability improvement as compared with a conventional product. In current fibre cement technology, typical levels of silica fumes are 5 to 10%. The silica fume addition of the preferred embodiments of the present invention is around 2 to 4% and this level is generally considered to low to modify the properties of the medium density FC composite.

Test 5—Workability

Example 2

As with Example 1, the workability, handleability and nailability of the FC composite produced according to preferred embodiments of the present invention was tested. Samples representing the conventional unpressed medium density FC product and the unpressed modified blend FC product according to preferred embodiments of the present invention were subjected to flexure tests. Handleability was taken as the ultimate strain value in the B direction corresponding to a 100 mm by 200 mm by 6 mm sample tested in flexure in saturated conditions. A 5000 urn/m ultimate strain value is generally considered the minimum for good handleability. Edge nailability was assessed by gun nailing at 13 mm from the edge onto a 250 mm by 250 mm by 6 mm sample and rating the extent of cracking. A numerical rating below 1 is considered very good nailability.

The results are shown in Table 6.

TABLE 6

Handleability & nailability results for unpressed durable and standard FC composites.

Composition	Ult. strain b-direction (sat. condition), um/m (*)	Nailability rating (13 mm from edge) (**)
Conventional Unpressed FC	9095	0.79
Unpressed Modified Blend FC	11433	0.38

(*) minimum 5000 um/m for good handleability.
(**) <1 rates: very good nailability.

It can be seen from Table 6 that the unpressed modified blend FC composite according to the preferred embodiments of the present invention exhibited very good handleability and nailability properties as compared with the conventional unpressed medium density product. Once again, these results are quite surprising since the modified blend FC composite according to the preferred embodiments of the present invention has a relatively low total fibre content, ie around 5.6% (see Table 3) as compared to 8% in standard FC composites. Such a low fibre content is outside the range commonly adopted in cellulose FC production, ie 7 to 9% and accordingly, the FC composite is expected to exhibit a very low ultimate strain value, ie brittle failure, and poor nailability.

Accordingly, it can be seen that the unpressed modified blend FC composite according to the preferred embodiments of the present invention surprisingly achieves an improvement in freeze/thaw durability (comparable with conventional high density FC composites) and at the same Lime maintains or improves workability (handleability and nailability improves over conventional medium density products).

The embodiments shown above provide two alternatives for modifying the properties of a low or medium density FC composite. In one embodiment, a low or medium density formulation undergoes a light press while maintaining a density lower than about 1.6 g/cm^3. In the second embodiment, a modified blend is used in the original formulation.

Both embodiments show significantly improved properties over conventional medium density FC products and in particular improved freeze/thaw durability while maintaining or improving workability. The resultant products have industrial application in a wide range of areas including exterior or interior use, roofing applications, wet area FC lining, etc.

While the present invention has been described with reference to the above examples, it would be appreciated that other embodiments, forms or modifications may be produced without departing from the spirit or scope of the invention as broadly described herein.

The invention claimed is:

1. A method of providing a low or medium density FRC product having a density of less than about 1.55 g/cm^3, comprising the steps of: i) providing a formulation for a low or medium density product; ii) forming a green article from said formulation; iii) curing said green article to form said prod-